

4. (Amended) The device of claim 1 wherein the analyte is naphthalene, toluene, ethylbenzene, 2, 4-dichlorophenoxyacetic acid,  $\beta$ -phenyl ethylamine, phenols or biphenyls.

7. (Amended) The device of claim 6 wherein the regulatory element further comprises a *mer* operator.

9. (Amended) The device of claim 8 wherein the *P. fluorescens* is *P. fluorescens* 5R.

13. (Amended) A genetically modified bacterium responsive to divalent mercury, said bacterium being encapsulated and containing a *merRo/p-lux* gene stably integrated into the bacterial chromosome, wherein said bacterium produces a bioluminescent protein in the presence of divalent mercury.

Please cancel claim 14, without prejudice.

15. (Amended) The genetically modified bacterium of claim 13 that is encapsulated in a matrix selected from the group consisting of alginate, carrageenan, acrylic vinyl acetate copolymer, latex, polyvinyl chloride polymer, sol-gels, agar, agarose, micromachined nanoporous membranes, polydimethylsiloxane (PDMS), polyacrylamide, polyurethane/polycarbamyl sulfonate and polyvinyl alcohol.

16. (Amended) The encapsulated genetically modified bacterium of claim 13 that is attached to a support matrix.

19. (Amended) A portable kit for detecting mercury II ion comprising the system of claim 2 or 3 and instructions for use in detecting mercury ion.

Please cancel claims 21 and 22, without prejudice.

24. (Amended) The kit of claim 19 wherein the bacterium is *P. fluorescens* 5R.

25. (Amended) A mobile method for detecting mercury in water samples comprising:  
providing a plurality of stably transformed bioreporter bacterium genetically modified to contain a *merRo/p-lux* gene, said bacterium attached to a support matrix and disposed within protective packaging for preserving hydration of said bacterium;

removing said protective packaging;

contacting a water comprising sample suspected of containing mercury II ion with said bioreporter bacterium and

detecting the presence of the mercury ion when a visibly detectable luminescence is produced, said detecting using a portable detection device.

27. (Amended) The method of claim 25 wherein said portable detection device comprises a naked eye, night vision equipment or a light-tight slide holder.